

HW: p. 476 #4, 10, 17, 19

HOMEWORK:

4) $H_0: p = 1/6$ ** $p =$ percent of 6's
 $H_a: p > 1/6$

$p\text{-value} = 0.03$

letter (d) is the correct conclusion.

10) - hypotheses: use p , not \hat{p}

- hypotheses: alternative should be not equal to
- conditions not checked well
- normal model not stated
- standard error is not calculated correctly
- p-value: should be $P(Z < -2)$
- conclusion is wrong

17) (a) $H_0: p = 0.63$
 $H_a: p > 0.63$

$$\begin{aligned} p &= 0.63 \\ n &= 240 \\ \hat{p} &= 163/240 = 0.679 \end{aligned}$$

(b) STATE:

- SRS
- $np \geq 10$
- $nq \geq 10$
- $\text{pop} \geq 10n$

CHECK:

assumed representative
 $(240)(0.63) \geq 10$
 $(240)(0.37) \geq 10$
there are more than 2400 students

Conditions met --> Normal Model --> 1 prop Z test

$$Z = \frac{0.6792 - 0.63}{\sqrt{\frac{(0.63)(37)}{240}}} = 1.571$$

$$P(Z > 1.571) = \text{normcdf}(1.571, \text{E99}, 0, 1) = 0.0581$$

We fail to reject H_0 because p-value of 0.0581 is greater than $\alpha = 0.05$. We have sufficient evidence that the true % of law school applicants who were admitted after taking the training program is still 63%.

(c) No. There is no evidence that the program increased the % of people who were admitted to law school.

19) (a) $H_0: p = 0.20$
 $H_a: p > 0.20$

$$p = 0.20$$

$$n = 22$$

$$\hat{p} = 7/22 = 0.318$$

$$\text{pop} = 150$$

(b) STATE:

- SRS
- $np \geq 10$
- $nq \geq 10$
- $\text{pop} \geq 10n$

CHECK:

will have to assume representative

$$(22)(0.20) \geq 10$$

$$(22)(0.80) \geq 10$$

there are NOT more than 220 cars in the fleet

We can NOT use our Normal Model for our 1-Prop Z-test

If you proceeded anyway...

$$z = \frac{\hat{p} - p}{\sqrt{\frac{p \cdot q}{n}}} = 1.383$$

$$P(Z > 1.383) = \text{normcdf}(1.383, \text{E}99, 0, 1) = 0.0833$$

We fail to reject H_0 b/c P-value of 0.0833 is greater than our alpha of 0.05. We have sufficient evidence that the true % of cars that fail emissions testing is still 20%.